

Patent claims:

1. Method for the preparation of polyester resins containing nanodispersed nanoscale additives as binding agents for powder paints, characterized in that the nanoscale additives are introduced in the form of a suspension in a liquid outer phase into the reaction mixture over the course of resin synthesis.
2. Method according to claim 1, characterized in that the nanoscale additives are introduced in the initial phase of the resin synthesis.
3. Method according to claim 1 or 2, characterized in that the outer liquid phase is water.
4. Method according to claim 1 or 2, characterized in that the outer liquid phase is solvents which behave neutrally to the synthesis of the polyester resins, such as aromatic hydrocarbons, low alcohols, ethers or ketones, for example.
5. Method according to claim 1 or 2, characterized in that the outer liquid phase is reactants which are used during the polyester synthesis.
6. Method according to claim 5, characterized in that the outer liquid phase is diols which are liquid at room temperature, such as ethanol 1,2, propane diol 1,2, propane diol 1,3, 2-methyl propane diol 1,3, butane diol 1,4, pentane diol 1,5, 3-methyl pentane diol 1,5.
7. Method according to claim 5, characterized in that the outer liquid phase is diols or polyols which are mixed with water or low alcohols.
8. Method according to claim 7, characterized in that the outer liquid phase is 2,2-dimethyl propane diol 1,3 or cyclohexane dimethanol which is mixed with water.
9. Method according to claim 7, characterized in that the outer liquid phase is cyclohexane dimethanol which is mixed with methanol.
10. Method according to claim 5, characterized in that the outer liquid phase is esters of dicarboxylic acids with low alcohols such as adipic acid dimethyl ester, glutaric acid dimethyl ester or succinic acid dimethyl ester.

11. Method according to claim 5, characterized in that the outer liquid phase is the inner esters of hydroxy carboxylic acids such as ϵ -caprolacton or γ -butyrolacton.
12. Method according to one of claims 1 to 11, characterized in that nanocrystalline tin-doped indium oxide (nano indium tin oxide) is used as a nanoscale additive.
13. Method according to one of claims 1 to 11, characterized in that antimony tin oxide and/or vanadium oxide is used as a nanoscale additive.
14. Method according to one of claims 1 to 11, characterized in that C nanotubes or C nanofibers are used as nanoscale additives.
15. Method according to one of claims 1 to 11, characterized in that ferrite particles are used as a nanoscale additive.
16. Method according to one of claims 1 to 11, characterized in that silver particles are used as a nanoscale additive.
17. Method according to one of claims 1 to 11, characterized in that silver/titanium dioxide is used as a nanoscale additive.
18. Method according to one of claims 1 to 11, characterized in that titanium dioxide is used as a nanoscale additive.
19. Method according to one of claims 1 to 11, characterized in that zinc oxide is used as a nanoscale additive.
20. Method according to one of claims 1 to 11, characterized in that zirconium dioxide is used as a nanoscale additive.
21. Method according to one of claims 1 to 11, characterized in that silicon dioxide is used as a nanoscale additive.
22. Method according to one of claims 1 to 11, characterized in that aluminum oxide is used as a nanoscale additive.

23. Method according to one of claims 1 to 11, characterized in that barium sulfate is used as a nanoscale additive.
24. Method according to one of claims 1 to 11, characterized in that clay minerals are used as nanoscale additives.
25. Method for the preparation of a powder paint formulation based on polyester resins as a binding agent component as well as, optionally, on pigments, fillers and additives which are conventionally used for powder paints, characterized in that polyester resins are used which are prepared using the method according to one of claims 1 to 24 which contain nanodispersed nanoscale additives.
26. Powder paint formulation based on polyester resins as a binding agent component as well as, optionally, on pigments, fillers and additives which are conventionally used for powder paints, wherein the powder paint formulation contains nanoscale additives, characterized in that the nanoscale additives are contained in the binding agent matrix of the powder paint formulation in a nanodispersed manner.
27. Powder paint formulation according to claim 26, characterized in that it contains nanocrystalline tin-doped indium oxide (nano indium tin oxide).
28. Powder paint formulation according to claim 26, characterized in that it contains antimony oxide and/or vanadium oxide as a nanoscale additive.
29. Powder paint formulation according to claim 26, characterized in that it contains C nanotubes or C nanofibers as nanoscale additives.
30. Powder paint formulation according to claim 26, characterized in that it contains ferrite particles as a nanoscale additive.
31. Powder paint formulation according to claim 26, characterized in that it contains silver particles as a nanoscale additive.
32. Powder paint formulation according to claim 26, characterized in that it contains silver/titanium dioxide as a nanoscale additive.

33. Powder paint formulation according to claim 26, characterized in that it contains zirconium dioxide as a nanoscale additive.
34. Powder paint formulation according to claim 26, characterized in that it contains silicon dioxide as a nanoscale additive.
35. Powder paint formulation according to claim 26, characterized in that it contains aluminum oxide as a nanoscale additive.
36. Powder paint formulation according to claim 26, characterized in that it contains titanium dioxide as a nanoscale additive.
37. Powder paint formulation according to claim 26, characterized in that it contains barium sulfate as a nanoscale additive.
38. Powder paint formulation according to claim 26, characterized in that it contains clay minerals as nanoscale additives.
39. Powder paint formulation according to claim 26, characterized in that it contains zinc oxide as a nanoscale additive.